STATUS OF FOOD SECURITY AND ITS DETERMINANTS IN RAYALASEEMA REGION, ANDHRA PRADESH

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Abstract

Public Distribution System in India is regarded as one of the most important constituent in food policy and food security system. It is supporting and protecting the vulnerable segment of population. The availability of food grains is not a sufficient condition to ensure food security to the poor in India. It is well documented that most poor families in the world spend nearly 80 percent of their total income on food grains. Hence, it is necessary to give priority to food security problem and factors governing food security at household level in the present scenario. In this background, the present study explores the average monthly consumption expenditure of the households followed by the assessment of food security situation among sample households in Rayalaseema region (Ananthapur district), Andhra Pradesh. A multiple regression technique was used to find out the determinants of food security at household level. The study found 62.9 percent of the variations in food security index are explained by the explanatory variables in Rayalaseema region, Andhra Pradesh.

Keywords: Public Distribution System, food policy, food security, consumption expenditure.

1. INTRODUCTION

Andhra Pradesh State is recognized as the "Rice Bowl of India". Agriculture plays a crucial role in its economy of Andhra Pradesh, the largest segment of the population being dependent on agricultural sector for employment. Rapid and sustainable growth in agriculture has been identified not only as a key driver for economic development but also for achieving self-sufficiency and ensuring food security to the people. The Global Hunger Index reveals that nearly 50 percent of Worlds hungry live in India. As per the Economic Survey (2018-19), India needs to take big initiatives to improve its food security as it faces supply constraints, water scarcity, small landholdings, low per capita GDP and inadequate irrigation.

Andhra Pradesh has been reducing the burden of subsidies on one hand and on the other it has drastically reduced the number of white ration cards during 2013-14. A new study based on NSSO data has estimated that 46.7 percent or 25.9 million metric tonnes of the grain (rice and wheat released through the PDS, did not reach the intended beneficiaries in 2011-12. The study further reveals that Andhra Pradesh and Tamil Nadu are among the better performers with 11.1 percent and 12.2 percent leakages respectively. The PDS has helped to reduce poverty and it improves food security of the poor. The targeted public distribution system aimed at providing essential commodities to the poor both in rural and urban areas at concessional rates. However, very often PDS is being criticized for in effectiveness and in efficiency in achieving its objectives. The Shanta Kumar Committee recommendations are completely against the implementation of TPDS and Food Security Act. It wants to reduce the coverage to 40 percent of the population as against 67 percent.

2. REVIEW OF LITERATURE:

The study of Dutta et al. (2011) was concludes that there is a problem in utilization of commodities, targeting of population,

magnitude of income transfers and cost effectiveness of food subsidies. A significantly higher number of people use PDS in Andhra Pradesh compared to Maharashtra and the coverage is higher by 30%. Similar study was observed by Dr.K.K.Tripathy and K.C.Mishra (2011) found that though India is one of the largest producers of the food in the world, yet nearly 300 million people struggle for meeting two square meals a day and 21 percent of the national population (230 million) are malnourished. Mahendra Dev (1998) study noted that PDS is not the only answer to food security of the poorest of the poor because it can be of help only to those who have purchasing power.

The determinants of food insecurity include social factors, income and environmental calamities. These determinants cause numerous households in Sub-Saharan Africa to experience food insecurity (forcing them to reduce), uncertainty in access to nutritionally adequate and safe food, and limited or uncertain ability to obtain acceptable food in socially acceptable ways pointed by Dutta, B. & Ramaswami, B.(2011). Food insecurity at the household level is related to several factors, including poverty, low income, level of education, household size, employment status, age, the type of household head (gender) and food price. Understanding the characteristics and determinants of household food insecurity is crucial to developing policies that address the challenges associated with

household hunger and food insecurity said by Dr.K.K.Tripathy & K.C. Mishra (2011).

3. OBECTIVES OF THE STUDY:

The main objectives for study are as follows.

1.   This study seeks to examine average monthly consumption expenditure of sampled respondents.

2.   This study makes an assessment of food security status of the households.

3.   This article aims to identify the factors governing food security at household level.

4. HYPOTHESIS:

The present study aims at to test the following hypothesis.

H_0 = There is no significant relationship between income and food security.

H_0 = There is no significant relationship between family size and food security status.

5. METHODOLOGY:

This study has been conducted on the basis of field survey and primary data. The study adopted random sampling method. A multiple regression technique was used by taking food security index as the dependent variable and the factors governing food security (age, agricultural land, family size, number of earners in the family, caste category, Income group, education, marital status and ration card) as the independent variables. A sample of 200 households randomly selected from Rayalaseem region (Ananthapur district) Andhra Pradesh. The data was drawn from four villages namely Brahmanpalle, Rajapuram, (Ananthapur revenue division) Vadigapalle and Kammavaripalle (Penukonda revenue division) in Rayalaseema region of Ananthapur District, Andhra Pradesh. 50 samples are randomly selected from each village. The collected data is processed, tabulated and analyzed.

Computation of household food security index:

The household was classified into food secure and food insecure households using food security index, which is used to establish the food status of various households.

$$F_i = \frac{\text{Percapita food expenditure for the } i^{th} \text{ household}}{2/3 \text{ mean percapita food expenditure of all households}}$$

Symbolically it can be written as $\quad F = \dfrac{X}{2/3 \, (Y)}$

Where, F_i = Food security Index,

$\qquad$ X $\qquad\qquad\qquad\qquad$ =

Percapita food expenditure for the ith household

$$^2/_3 (Y) =$$

Mean per capita food expenditure of all households

F > 1= Food secured household,

F < 1= Food insecure household

A food secure household is therefore that, whose per capita monthly food expenditure fall above or is equal to $^2/_{3rd}$ of the mean per capita food expenditure.

6. RESULTS:

The consumption pattern of the households is explained by studying the differences in the expenditure on different items in the consumption baskets. The study divides the expenditure in 24 items which includes 13 food items and 11 non-food items. The facts relating to the average monthly expenditure of the households both on food and non-food items as shown in table 1.1.

Table: 1.1 *Consumption Expenditure of the households in Rayalaseema region*

Items	Expenditure in Rs	Percentage
1.Cereals	907	13.26 %
2. Wheat	6	0.09 %
3. Pulses	206	3.02 %
4. Oils	226	3.30 %
5. Milk Products	741	10.85 %
6. Eggs	58	0.84 %
7. Non Veg	176	2.57 %
8. Vegetables	258	3.77 %
9. Fruits	185	2.71 %
10. Spices and other ingredients	191	2.79 %
11. Sugar	54	0.78 %
12. Flour	188	2.75 %
13. Other Food	466	6.82 %
Total Food Expenditure	**3661**	**53.56 %**
1.Medicines	314	4.59 %
2. Education	540	7.90 %
3. Liquor	290	4.24 %
4. Pan and Tobacco	81	1.19 %
5. Cloth and Slippers	206	3.01 %
6. Soaps, tooth paste and other cosmetics	408	5.97 %
7. Electricity	228	3.34 %
8. Petrol	20	0.29 %
9. Telephone charges	207	3.03 %
10. Other non food expenses	396	5.79 %
11. Rent and Taxes	485	7.10 %
Total Non Food Expenditure	**3174**	**46.44 %**
Total monthly household Expenditure	**6835**	**100.00 %**

Source: Primary Survey

Table 1.1 shown that, the average monthly consumption expenditure of the households has been estimated at Rs. 6,835. Out of which, Rs. 3,661 spent on food items (53.56 percent) and Rs. 3,174 was incurred on non food items (46.44 percent). The results shown that, cereals, milk products and other food expenses has a larger share in total food expenditure. Subsequently,

non food consumption expenditure on education, rent and taxes, soaps, tooth pastes and other cosmetics, other non food expenses and medicines was high.

A). Per capita Food Expenditure:

The per-capita consumption expenditure is explained, based on the expenditure made by the households on different food items. The details of per capita food expenditure are presented in table 1.2.

Table: 1.2 *2/3 rd Per capita Food Expenditure (in mean figures)*

Region	Per capita food Expenditure	2/3 rd Per capita food expenditure	2* Per capita food expenditure
Rayalaseema	1082	721.6311	2164.9

Note: 2* Per capita food expenditure (PCFE) $\times$ 2

Table 1.2 signifies the status of per capita food expenditure of the households. Average monthly per capita food expenditure of total sample households (200) in Rayalaseema region is rupees 1082. Based on the above formula of 2/3rd per capita food expenditure of total sampled households is rupees 721. Two times (double) per capita monthly food expenditure of total sampled households is rupees 2164.

B). Food Security Index limits:

• The households whose per capita monthly food expenditure is below 737 rupees are treated as food insecured household.

• A moderately food secure household is therefore that, whose per capita monthly food expenditure lies between 737 to 1106 rupees.

• Households are said to be food secured when their per capita monthly food expenditure falls between 1106 to 2211 rupees.

• A highly food secured household is one whose per capita monthly food expenditure is more than 2211 rupees.

Table: 1.3 *Food Security Index limits*

Region	In secured	Moderately secured	Secured	Highly secured	Total
Rayalaseema	38 (19.0)	83 (41.5)	68 (34.0)	11 (5.5)	200 (100.0)

Source: Primary Survey

Note: 2/3 PCFE: Per capita food expenditure

A cross tabulation analysis of food security among 200 households in table 1.3 demonstrates, about 19.0 percent of the households are food insecure while, 41.5 percent of the households were moderately secured. On the other hand, 34 percent of the households are food secured and only, 5 percent of the households are highly food secured. From the foregoing description it is noticed that, food insecure households are highest in the study area.

C). Determinants of food security index in Rayalaseema region:

In order to find out the factors that determine food security index in rayalaseema region multiple regression model has been prepared by taking food security index as the dependent variable and the selected nine explanatory variables as the independent variables.

D). Multicolinearity screening of variables in Rayalaseema region:

Table 1.4 shows the test for multicolinearity among the variables in rayalaseema region. This test signifies there is no linear relationship

between dependent and independent variables. The result of the correlation matrix shows that there is no perfect correlation between food security index and independent variables. The estimated Pearson correlation co-efficient values are fluctuated between -0.760 and 0.302, which clearly represents that, there is no approximate or linear relationship existed between food security index and explanatory variables.

E).Outcomes of regression model in Rayalaseema region:

Table 1.5 shows outcomes of regression model in rayalaseema region which were drawn from 200 sample households. It could be noted from table 1.5 the specified regression model is significant at 1 percent level of probability. The level of count egested R2 obtained is 0.629; which shown that 62.9 percent of the variations in the Food Security Index are explained by the changes in the explanatory variables in rayalaseema region. On the other hand, about 37.1 percent of variations in food security status among the households in rayalaseema region are influenced by the other factors which are not included in this model.

In Rayalaseema region, agricultural land the only variable to show a significant positive impact on household food security index. A unit increase in agricultural land would leads to increase about 0.196 units of increase in the food security index at one percent level of significance in rayalaseema region. It implies that, household access to food security increases when farm size expands with increased production and productivity in agriculture. Whereas, age, number of earners in the family and income group shows positive impact on food security index but statistically insignificant.

On the other side, household's family size has a negative impact on food security status and it was statistically significant at 1 percent level of significance in Rayalaseema region. A unit increase in family size result in decrease of -0.473 units in the food security index in rayalaseema region. This indicates food insecurity among household's increases as number of family members increases. Hence, a negative relationship is established between family size and food security in rayalaseema region. Further, caste category, marital status, education level and type of ration card also show negative association with food security index but statistically they are insignificant in rayalaseema region.

In Rayalseema region, it is noticed from the egested regression model among all exploratory variables agricultural land is the only variable to have a significant positive effect on the food security index. Family size is only the variable have a significant negative effect on the food security index in rayalaseema region.

Table: 1.4 *Multicolinearity screening of variables in Rayalaseema region*

		Food security Index	Age	Agricultural land	Family size	Number of earners in the family	Caste Category	Income group	Education	Marital status	Ration card type
Food security Index	Pearson Correlation	1	.086	.302[**]	-.760[**]	-.496[**]	-.162[*]	.094	-.081	-.085	-.039
	Sig. (2-tailed)		.224	.000	.000	.000	.022	.185	.257	.232	.583
	N	200	200	200	200	200	200	200	200	200	200
Age	Pearson Correlation		1	-.008	-.156[*]	-.192[**]	-.179[*]	-.295[**]	-.360[**]	.310[**]	.139
	Sig. (2-tailed)			.909	.028	.006	.011	.000	.000	.000	.050
	N		200	200	200	200	200	200	200	200	200

Vanguru. Naga Satyanarayana | | | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 |
|---|---|---|---|---|---|---|---|---|---|
| Agricultural land | Pearson Correlation | 1 | -.170* | -.095 | -.013 | .198** | .065 | -.098 | -.117 |
| | Sig. (2-tailed) | | .016 | .181 | .851 | .005 | .357 | .168 | .100 |
| | N | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Family size | Pearson Correlation | | 1 | .675** | .159* | .054 | .099 | -.033 | -.022 |
| | Sig. (2-tailed) | | | .000 | .025 | .448 | .163 | .641 | .757 |
| | N | | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Number of earners in the family | Pearson Correlation | | | 1 | .130 | .059 | .038 | -.113 | -.005 |
| | Sig. (2-tailed) | | | | .066 | .405 | .595 | .111 | .941 |
| | N | | | 200 | 200 | 200 | 200 | 200 | 200 |
| Caste Category | Pearson Correlation | | | | 1 | .090 | .158* | -.150* | .030 |
| | Sig. (2-tailed) | | | | | .204 | .026 | .034 | .670 |
| | N | | | | 200 | 200 | 200 | 200 | 200 |
| Income group | Pearson Correlation | | | | | 1 | .125 | -.211** | -.249** |
| | Sig. (2-tailed) | | | | | | .078 | .003 | .000 |
| | N | | | | | 200 | 200 | 200 | 200 |
| Education | Pearson Correlation | | | | | | 1 | -.118 | -.137 |
| | Sig. (2-tailed) | | | | | | | .095 | .053 |
| | N | | | | | | 200 | 200 | 200 |
| Marital status | Pearson Correlation | | | | | | | 1 | .117 |
| | Sig. (2-tailed) | | | | | | | | .098 |
| | N | | | | | | | 200 | 200 |
| Ration card type (poverty status) | Pearson Correlation | | | | | | | | 1 |
| | Sig. (2-tailed) | | | | | | | | |
| | N | | | | | | | | 200 |

**. Correlation is significant at the 0.01 level (2-tailed)., *. Correlation is significant at the 0.05 level (2-tailed).

a. Region = Rayalaseema region   **Source:** Primary Survey

Table: 1.5 *Outcomes of Regression model (for 200 samples) – Rayalaseema region*

Model	Coefficients (B)
(Constant) Food security Index	4.014
X_1 Age	0.001***
X_2 Agricultural Land	0.196*
X_3 Family size	-0.473*
X_4 Number of earners in the family	0.008***
X_5 Caste category	-0.057***
X_6 Income Group	0.103**
X_7 Education	-0.025***
X_8 Marital status	-0.089***
X_9 Ration card type (Poverty status)	-0.020***
R	0.793
R Square	0.629
Adjusted R Square	0.611
Std. error of the Estimate	0.51625
Sig. F change	0.000

*Significant at the 1% level. **Significant at the 5% level. ***Significance at the 10% level

7. CONCLUDING REMARKS:

The main aim of this study was to identify the determinants of food security in Rayalaseema region of Ananthapur district, Andhra Pradesh. The result of regression model indicates that the variations in the food security Index are explained by the changes in the explanatory variables is 62.9 percent in rayalaseema region (based on the level of count egested R2). Based on the analysis, it is observed that researcher formulated two null hypotheses. Out of which one hypothesis is rejected at 5% level and other one rejected at 1% level of significance. Hence,

it can be concluded that there is a positive relationship between income and food security index at 5% level of significance. Further, it can be noted that there is a negative relationship between family size and food security at 1% level of significance. Finally, it is inferred that higher the income of the household higher the chances of a household being food secure. At the same time as the family size increases, the chance of food security decreases.

8. POLICY RECOMMENDATIONS:

The outcomes of the study revealed that, the food security of the sampled households is not up to the mark. Hence, it is urgent to recommend suggestions to improve the food security condition of the households in Rayalaseema region, Andhra Pradesh.

i.   Agriculture land has a positive effect on household food security. So, measures must be made to enhance farm size to improve food production and sustainable agricultural development as well.

ii.   It is also noticed that, family size has a significant impact on household food security. This shows that, there exists an inverse relationship between food security and family size. Hence, it draws a serious attention to control rapid growth of population in the study area.

iii.   Income of the household has a positive relation with household food security status. The study recommends provision of employment opportunities in agriculture, industry, handicrafts and business will certainly shoot up the earning capacity of the people in the study area.

Reference

[1] B. Siddapa. (1991). Report on public distribution system in Karnataka, ICSSR, New Delhi.
[2] Dutta, B., & Ramaswami, B. (2011): "Targeting and Efficiency in the Public Distribution System: Case of Andhra Pradesh and Maharashtra"- Economic and

Political Weekly, 1524-1532.7. Ihab A., Rohana A.,

[3] Dr.K.K.Tripathy & K.C. Mishra, "Food security in India, policy issues and challenges", Kurukshetra, March 2011, 59:14

[4] Mahendra Dev, S., "Public Distribution System - Impact on Poor and Options for Reform", Economic and Political Weekly, August 29, 1998, XXXII (35): 2285-90

[5] Daneshi-Maskooni M., Dorosty-Motlagh A. R., Hosseini S. M., et al. Food insecurity and some associated socioeconomic factors among upper gastrointestinal cancer patients. IRJABS. 2013;4(2):482-486.

[6] Manan W. W. Concept and Measurements of Household Food Insecurity and Its Impact on Malnutrition: A Review. International Medical Journal. 2015;22(6):509- 516